CLAIMS

What is claimed is:

1. A method for transporting images from a single video display to both eyes of a user, said method comprising:

focusing an image of said display to reduce a splitting volume; and

splitting said image in said reduced splitting volume.

2. The method of claim 1 wherein a lens focuses said image of said display.

3. The method of claim 2 wherein said lens is made of glass.

4. The method of claim 2 wherein said lens is proximate to said display.

5. A head mounted device for transporting images of a single video display to both eyes of a user, said device comprising:

optics for focusing said image of said display to a reduced splitting volume; and

means for splitting said focused image in said reduced volume.

6. The device of claim 5 wherein said optics is a lens.

7. The device of claim 5 wherein said splitting means comprises a partially reflective surface and a fully reflective surface.

8. The device of claim 5 wherein said splitting means comprises:

a first fully reflective surface and a second fully reflective surface arranged as a symmetric V mirror.

9. The device of claim 5 wherein said optics are a lens in proximity to said display.

10. The device of claim 9 wherein said lens is arranged to collimate light illuminating said display.

11. A method of channeling a displayed image, said method comprising:

projecting said displayed image along an optical path;

positioning a lens to focus the displayed image to a point on the optical path; and

splitting the display image, proximate to said point, into a plurality of sub-images each sub-image following one of a plurality of optical sub-paths.

12. The method of claim 11 wherein said point is the focal point of said lens.

13. The method of claim 11 further comprising:

positioning at least one reflector along the optical path whereby the distance between said display lens and said point is reduced.

14. The method of claim 11 further comprising:

splitting the display image with a plurality of reflective surfaces arranged about a display axis.

15. The method of claim 14 wherein a rotation of said reflective surfaces may be used to adjust for an inter pupillar distance.

16. The method of claim 11 further comprising:

forming a real image on a diffuser along at least one of the plurality of optical sub-paths.

17. The method of claim 16 wherein a movement of said diffuser may be used to adjust for an inter pupillar distance.

18. The method of claim 11 further comprising:

redirecting the optical sub-path with a first reflector along at least one of the plurality of optical sub-paths.

19. The method of claim 18 wherein a movement of said first reflector may be used to adjust for an inter pupillar distance.

20. The method of claim 18 wherein said optical sub-path is redirected by a second reflector, wherein said second reflector is rotatable, and wherein said rotation may be used to adjust for an inter pupillar distance.

21. The method of claim 11 further comprising:
illuminating a display with a broad-band radiation source.

22. The method of claim 21 wherein the broad-band radiation source is comprised of a plurality of narrow-band radiation sources projecting radiation along a common source path.

23. The method of claim 22 further comprising:
using color filters to simulate a source location.

24. The method of claim 21 wherein said lens collimates said illumination.

25. A device for channeling a displayed image, said device comprising:

means for projecting an image along an optical path;

means for focusing said image;

means proximate to a focal point of said image for splitting said image into a plurality of display sub-images, each said sub-image following one of a plurality of optical sub-paths; and

wherein said focusing means is interposed between the said projecting means and said splitting means.

26. The device of claim 25 wherein said splitting means comprises a plurality of means for reflecting the image.

27. The device of claim 25 wherein the splitting means comprises:

means for partially reflecting the image;

and means for fully reflecting the image.

28. The device of claim 26 wherein the means for partially reflecting the image and the means for fully reflecting the image are perpendicular to each other.

29. The device of claim 27 wherein the means for partially reflecting the image and the means for fully reflecting the image are arranged asymmetrically about the display axis.

30. The device of claim 26 wherein the means for partially reflecting the image and the means for fully reflecting the image are rotatable and wherein said rotation may be used to adjust for an inter pupillar distance.

31. A method for channeling a displayed image, said method comprising:

projecting an image of a display along an optical path;

splitting said image into a plurality of display sub-images, each sub-image following one of a plurality of optical sub-paths; and

focusing said image with a focusing element wherein said projected image is focused to a location proximate to the point where said image is split.

32. The method of claim 31 wherein said image is projected via predominately collimated light and said location is approximately the focal point of said focusing element.

33. The method of claim 31 wherein said image is projected via predominately convergent light, and said location lies between said display and the focal point of said focusing element.

34. The method of claim 31 wherein said image is projected via predominately divergent light, and the focal point of said focusing element lies between said display and said location.

35. The method of claim 31 wherein said projected image is the reflected image of said display when said display is illuminated by light collimated by said lens.

36. A system for channeling a displayed image, said device comprising:

a display that projects an image along an optical path;

a lens that focuses the image;

a splitter in proximity to the focal point of said image for creating a plurality of display sub-images, each said sub-image following one of a plurality of optical sub-paths; and

means for forming a real image along at least one of the plurality of said optical sub-paths.

37. The system of claim 36 wherein a movement of said forming means may be used to adjust for inter pupillar distance.

38. The system of claim 36 wherein said forming means is a spherical diffuser.

39. The system of claim 36 wherein said forming means is a diffraction grating.

40. The system of claim 36 wherein said forming means is a microlens array.

41. A system for channeling a displayed image, said device comprising:

a display that projects an mage along an optical path;

a lens that focuses the image;

a splitter, in proximity to the focal point of said image for creating a plurality of display sub-images, each said sub-image following one of a plurality of optical sub-paths; and

a means for redirecting at least one of said plurality of optical sub-paths.

42. The system of claim 41 wherein said redirecting means is a mirror.

43. The system of claim 41 wherein a movement of said first redirecting means may be used to adjust for inter pupillar distance.

44. The system of claim 43 wherein a second redirecting means is rotatable about an axis common to the first and second redirecting means and wherein said rotation may be used to adjust for inter pupillar distance.

45. A head mounted display, said head mounted display comprising:

a display screen operable to produce a display image along an optical path;

display optics, proximate to said display screen, wherein said optics focus said image to a point; and

a splitter, located proximate to said point, for splitting the display image into a plurality of display sub-images each sub-image traveling along one of a plurality of optical sub-paths.

46. The head mounted display of claim 45 wherein the partially reflective surface and the fully reflective surface are arranged as an asymmetric V-mirror splitter.

47. The head mounted display of claim 45 further comprising:

a diffuser to form a real image along at least one of the plurality of optical sub-paths.

48. The head mounted display of claim 47 wherein said diffuser is spherical.

49. The head mounted display of claim 45 said display screen, said optics, and said splitter are arranged as a fixed section that moves, synchronous with at least one eyepiece, to adjust to a user's interpupillary distance.

50. A head mounted, said head mounted display comprising:

a display screen operable to produce an image along an optical path;

display optics, proximate to said display screen, wherein said optics focus said image to a point;

a splitter, located proximate to said point, for splitting the display image into a plurality of display sub-images each sub-image traveling along one of a plurality of optical sub-paths; and

a reflector arranged along at least one of the plurality of optical sub-paths.

51. The head mounted display of claim 50 further comprising:

a diffuser interposed between the reflector and eye optics.

52. The head mounted display of claim 50 wherein said reflector is moveable.

53. The head mounted display of claim 50 further comprising:

a second reflector arranged along said at least one of the plurality of optical sub-paths to redirect the at least one of the plurality of the optical sub-paths.

54. The head mounted display of claim 53 wherein the second reflector is rotatable about an axis common to the first and second reflectors and wherein said rotation can adjust for a user's interpupillary distance.

55. A system for channeling a displayed image, said system comprising:

a display operable to produce a display image along an optical path;

display optics proximate to the display, said display optics having a focal point;

a broad-band source projecting radiation onto said display; and

a splitter located proximate to the focal point, said splitter operable for splitting the display image into a plurality of display sub-images each sub-image traveling along one of a plurality of optical sub-paths.

56. The system of claim 55 wherein the broad-band projector is comprised of a plurality of narrow-band sources arranged to simulate a single broad-band projector.

57. The system of claim 55 wherein said broad band source comprises:

a first and a second filter;

a first, a second, and a third narrow-band projectors;

wherein said first narrow-band projector is positioned to project radiation through said first filtering means and along a common source path;

wherein said second narrow-band projector is positioned to project radiation onto said first filter, and wherein said first filter is positioned to reflect said radiation from said second narrow-band projector through said second filtering means and onto said common source path; and

wherein said third narrow-band projector is positioned to project radiation onto said second filtering means, and said second filter is positioned to reflect radiation from said third projector onto said common source path.

58. The system of claim 57 wherein said first, second, and third narrow-band projectors project visible light of wavelengths corresponding to red, green, or blue.

59. A system for channeling a displayed image, said system comprising:

a sub-image creation section wherein an image of a display is focused and used to generate at least two sub-images each directed along one of two sub-paths;

at least one eyepiece section interposed along each of said sub-paths; and

wherein said sub-image creation section and said eyepiece section adjust for interpupillary distance via synchronized movements.

60. The system of claim 59 wherein said synchronized movements maintain a constant length for each sub-path.

61. The system of claim 59 wherein said eyepiece section movement is in a direction perpendicular to the movement of said sub-image creation section.